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Marine Corps scquadrons face a nearly impossible task of completing all required annual Marine Corps Training, aviation-related ground training, aviation training and maintenance procedures while balancing administrative duties unrelated to their Military Occupational Specialty (MOS). The total time of all these requirements exceeds the time allotted in one year. Although the most beneficial change would be to alleviate some of the non-MOS administrative duties due to the greater amount of time focused on them, a more simplistic way to alleviate the pressures on both squadrons and the Marine Corps in general is to re-evaluate annual training requirements.

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MASTER OF MILITARY STUDIES

The Impact of Ground Training on Aviation Readiness

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

Major Brett A. Allison

AY 2009-2010

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Executive Summary

Title: The Effective of Ground Training on Aviation Readiness

Author: Maj Brett Allison, United States Marine Corps

Thesis: Increased ground training requirements threaten the proficiency of Marine aviation units and impede their ability to perform their missions.

Discussion:"Every Marine a rifleman" is one of the creeds of the United States Marine Corps; however, the qualifications to be a rifleman have increased significantly over time. Today's Marine is required to complete a much heavier load of annual training than ever before. Marine aviation units in particular are impacted negatively by the numerous training requirements. Squadron personnel are required to perform monthly and annual training in MOS-related subjects in addition to the training all Marines must complete. This study utilizes the results from a survey of fleet squadrons on how their time is spent, a look at past training, and a study of current training requirements found in various Marine Corps Orders and other directives to better understand the issue. The goal is to have a better understanding of how training impacts the time units have to conduct proficiency training within their specialty. Due to the complex nature of aviation maintenance and operations, a high-level of proficiency must be maintained in order to complete missions successfully and safely. Increased ground training requirements threaten the proficiency of Marine aviation units and impede their ability to perform their missions.

Conclusion: Marine Corps squadrons face a nearly impossible task of completing all required annual Marine Corps Training, aviation-related ground training, aviation training and maintenance procedures while balancing administrative duties unrelated to their Military Occupational Specialty (MOS). The total time of all these requirements exceeds the time allotted in one year. Although the most beneficial change would be to alleviate some of the non-MOS administrative duties due to the greater amount of time focused on them, a more simplistic way to alleviate the pressures on both squadrons and the Marine Corps in general is to re-evaluate annual training requirements.

DISCLAIMER

THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORP COMMAND AND STAFF COLLEGE OR ANY OTHER GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FORGOING STATEMENT.

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INTRODUCTION

"Every Marine a rifleman" is a credo of the United States Marine Corps and a significant aspect of the Corps' ethos. The qualifications to be a rifleman have increased significantly over time. The ability to provide one's own musket was the original requirement during the genesis of the Marine Corps. Over the years the requirements to be a rifleman have evolved from the basic marksmanship training of the 1920s, under Commandant John A. Lejeune to the common skills training developed by Commandant Alfred M. Gray in the 1980s.[1] Today's Marine is required to complete a much heavier load of annual training than ever before. Marine aviation units in particular are negatively impacted by the numerous training requirements. Squadron personnel are required to perform monthly and annual training in MOS-related subjects in addition to the training all Marines must complete. Due to the complex nature of aviation maintenance and operations, a high-level of proficiency must be maintained in order to complete missions successfully and safely. Increased ground training requirements threaten the proficiency of Marine aviation units and impede their ability to perform their missions.

Background

The balance of infantry skills and Military Occupational Specialty (MOS) related skills is not a new challenge to the Marine Corps. Initially, all Marines were light infantry. As ships' companies in which they served in boarding parties and security details afloat and on land, Marines had little need of specialties outside of combat arms.[2] As the Corps grew in size, mission, and technological capability during the late nineteenth and early twentieth century, the Corps required the additional MOS for its Marines. Lejeune recognized that progress and development were healthy for the Marine Corps but still required each Marine to perform basic self-defense and perform satisfactorily in the marksmanship program.

World War II was the first true test of General Lejeune's marksmanship program. During that time, combat service support elements stopped numerous Japanese counterattacks and infiltrations on islands such as Guam.[3] The small size of the Marine Corps meant that there were not enough infantrymen to provide rear-area security, leaving those duties to support personnel. Korea proved to be the next test of "every Marine a rifleman" when cooks and service support personnel were sent to the front lines as infantryman. The Marine Corps continued training all Marines not only in marksmanship, but in infantry tactics during the late 1950s and early 1960s.[4] After Vietnam, much of this training disappeared until the early 1980s, when General Alfred M. Gray developed Marine Corps Common Skills training during his time as Commanding General, Marine Corps Combat Development Command.

Marine Corps Common Skills training brought back an emphasis on basic infantryman skills. The program was developed to be implemented at several levels. Basic military culture was introduced during boot camp and Officer Candidate School, but true combat skills were first introduced during Marine Combat Training and The Basic School for enlisted and officers respectively. Each enlisted Marine was trained to the basic infantryman level and each officer was capable of leading a rifle platoon. Operational units were responsible for continuing the sustainment level training for each Marine both individually and organizationally. Individually, Marines would conduct Marine Corps Common Skills training on various topics over the course of the year and be tested annually. Individual training was often conducted as part of larger organizational training, such as field exercises. Organizational training was evaluated through Marine Corps Combat Readiness Evaluations as well as commanding general inspections. Formal schools were the last echelon of training, introducing Marines to the next step in their professional development.

The implementation of such a robust training program would require time then as it does now. Major Robbin W. Cobble conducted an independent study in 1974, approximately ten years prior to General Gray's changes to Marine Corps Common Skills training, examining the feasibility of completing required annual training for a typical Marine Corps unit. The study utilized the information from a communications company, arguing that training requirements for specific MOSs would be similar throughout the Marine Corps. Findings from the study stated that more time was required than was available. The author offered varying solutions, such as concurrent training. Concurrent training is the accomplishment of one or more training requirement during a single evolution. Utilizing a field exercise to accomplish both unit and individual training, or conducting live-fire training in conjunction with a patrolling exercise are examples of concurrent training. While concurrent training enabled units to complete more training within a finite amount of time, it was still inadequate for completing all of the required training.[5]

Colonel Pat Collins conducted another independent study in 1984 that evaluated how training systems were developed. The author stated that as technology increased a training gap would develop. The training gap was the difference between the complexity of the system and the user's training and proficiency to utilize the system. Simply stated, as technology increases, the time to train an individual to use that technology also needs to increase in order to maintain proficiency.[6] Technology advances at a much more rapid pace today than it did twenty years ago, which equates to a greater need to focus on MOS specific training in order to better understand the systems.

ANNUAL TRAINING REQUIREMENTS

Defining a Year

Prior to assessing annual training requirements it is necessary to develop a standard year for a Marine Corps Unit. Cobble's study derived a standard of 228 days a year by subtracting 104 weekend days, nine national holidays, and twenty-four days of annual leave (six days assumed to be accounted for through weekends) from 365 calendar days for a total of 228 available working days during his analysis. He then applied a seven-and-a-half hour working day for 1710 man hours/year.[7] Current Marine Corps Leave and Liberty Regulations lists ten holidays vice nine, and further states in change three that "commanders should adjust hours of departure and return from leave and liberty to ensure that driving is accomplished during daylight hours."[8] Many commanders have interpreted this to mean that the all holiday liberty periods will commence at 1201 the day prior and terminate at 1200 the day after the actual liberty periods, which equates to an additional lost work day. An example of such policies is found on II Marine Expeditionary Force's web-page under the 2010 Holiday Liberty periods, which extends liberty to 1800 the following day for most holidays, accounting for a full day and a half lost.[9] Conversely, some lost time has been accounted for by a longer standard work day. 0730-1630 is widely accepted as the Marine Corps standard, which equates to approximately eight man-hours a day after accounting for lunch/personal time. Given the adjustments, this study will assume a 217 day year with eight hours available each day, for a total of 1736 man-hours available in a given year.

USMC Annual Ground Training Requirements

The Marine Corps requires each Marine to complete certain training events annually. There are seventeen annual training requirements listed on the Training and Education Command's website (figure 1).[10] Most training requirements have an annual sustainment interval, with the

exception of the PFT/CFT (semiannual) and combat water survival (one to six years for sustainment depending on level of qualification). Furthermore, most training requirements are to be completed by all ranks. Appendix C of the Unit Training Management guide quantifies some of these annual training requirements (figures 2 and 3), totaling between 234 and 274 total hours (assuming forty-eight weeks a year).[11] However, there are a few inconsistencies with these figures. The Marine Corps Order referenced in the Unit Training Management guide for Troop Information could not be located, which leaves eight hours of training vaguely unaccounted for. Additionally, the Unit Training Management Guide does not list all seventeen training requirements found on Training and Education Command's (TECOM) website.[12] By discounting the eight hours of Troop Information and replacing them with TECOM's additional training requirements, there are 249 to 304 hours of required training, not including the Marine Corps Martial Arts Program, which this study will assume to be included in the three hours of required physical training per week, and Marine Corps Battle Skills Training. The difference in training requirements found in the Unit Training Management Guide, dated 1996, and the current annual training requirements posted on TECOM's website is one small indicator of how training requirements have increased just within the past thirteen years.

Marine Corps Battle Skills Training poses a unique problem when trying to determine required training time. Marine Corps Order (MCO) 1510.90A, Individual Training Standards for Marine Corps Common Skills, Volume II - Corporal through Captain, identifies thirty separate duty areas in which Marines must maintain a certain level of knowledge. Each of these duty areas may include up to thirty-two tasks to perform. The Marine Corps Common Skills Program states:

> All units, both in the operating forces and supporting establishment, except those units exempted in subparagraph (e), will conduct MCCS training annually. All Marines

> (private – gunnery sergeant, warrant officer 1 – chief warrant officer 2, 2nd lieutenant – captain) will conduct sustainment training and be evaluated annually on their mastery of common skills.[13]

The two methods of evaluating the common skills are practical application or test booklet. It is difficult to tie a time metric to these events. A recent draft proposal by Major Prince at TECOM noted that most units only train to those skills that may be tied to their unit's Mission Essential Tasks and opt to give the written evaluation due to time constraints.[14] One may assume that these units had not conducted Marine Corps Common Skills training as the program intended due to time constraints and the excessive nature of the program.

Not included in the training figures noted above are the additional training requirements laid upon subordinate units by higher headquarters. These typically take the form of previously unscheduled safety stand-downs. The Marine Corps Safety Program outlined in MCO 5100.29A states that safety stand-downs should be conducted semi-annually. Safety stand-downs should be planned well in advance, though MCO 5100.29A mentions that short-notice or no-notice stand-downs may be necessary. Higher headquarters tend to invoke short/no-notice stand-downs as a knee-jerk reaction to specific incidences that may occur within their commands. MCO 5100.29A also lists other safety training that may not apply to everyone in a unit, but still takes up a significant amount of time, such as motorcycle safety programs. Again, numerous higher headquarters have taken some of these training requirements and expanded them to encompass everyone within their subordinate units.

Pre-Deployment Training

In addition to annual training requirements, deploying units have additional pre-deployment training to conduct. Units preparing to deploy to Iraq and Afghanistan must conduct block I, II, III and IV training (block V is remediation training for any of the previous blocks as

necessary). Block I and II training is generic to all units deploying to theater, while blocks III and IV are specific to each units function. Generic Block I and II training consists of the following:

Block I (battle skills test - entry level plus MOS school and unit refinement):

a. Enhanced Marksmanship Program
b. Common Combat Skills
c. Annual training requirements (PFT, gas chamber, rifle range, and swim qualification)
d. MOS proficiency skills
e. Incidental driver training (selected marines)
f. Vehicle familiarization (to include up armored vehicles)
g. Vehicle preventive maintenance
h. Immediate action drills (tire change/tow procedures)
i. Basic driver skills (minimum day/night orientation)
j. Crew served weapons training (selected marines)
k. Nomenclature characteristics
l. Assembly/disassembly/maintenance
m. Loading/unloading procedures, immediate action
n. Familiarization fire (as required per assigned weapon, gunners only)
o. HMMWV Egress Assistance Trainer (HEAT)

Block II (current common individual skills requirements):

a. Marksmanship
b. Improvised Explosive Device defeat
c. Motorized ops
d. Urban Tactics, Techniques, and Procedures (TTP)
e. Vehicle Check Points/Entry Control Points/Escalation of Force/Law of War
f. Precombat actions
g. Cultural
h. Fixed site security
i. First aid
j. High risk capture

Most of these requirements may be accomplished via an online course with the exceptions of annual training requirements, marksmanship training/live-fire, HEAT, and Urban TTP.[15] Assuming one hour to complete each computer based training module or training evolution pre-deployment training may consume an additional twenty hours or more.

Summary of USMC Annual Training Requirements

Approximately 350-400 hours, or approximately 20-23% of the total time available annually, is spent on ground training common to all Marines. These results are similar to those found in Cobble's 1974 study. At that time, non-mission oriented training accounted for 22% of the man-hours annually in a common Marine Corps unit. When non-mission oriented training was added to mission oriented training and maintenance requirements the total man-hours required 111-114% of the total man-hours available to them.[16] Applying Colonel Collins' logic that technological advances increase required training in order to maintain mission readiness, total time required of today's common Marine Corps unit may reach 115-120% of the total time available.

ADDITIONAL GROUND TRAINING FOR AVIATION UNITS

Aircrew Training

Due to the technical nature of Marine Corps Aviation, additional ground training is required for Marine Corps squadrons. Because Marine Corps Aviation is a part of Naval Aviation, Marine Corps squadrons receive guidance for training from both the Department of the Navy as well as Headquarters Marine Corps. Under the Department of the Navy the Commander Naval Air Forces publishes the general rules and regulations that all naval aviators must follow, and the Naval Safety Center directs the School of Aviation Safety to develop and implement the Crew Resource Management Training Program. The following is a list of ground training required for all Naval Aircrew members:

a. Naval Air Training and Operating Procedures Standardization (NATOPS).
   - Open Book and Closed Book Written Exams (three hours annually).
   - Emergency Procedure Simulator/Quiz (one hour monthly).

b. Water Survival (every four years).

c. Physiology (one hour annually).
d. Instrument (Pilots and NFO only).
    - Classroom instruction (eight hours annually).
    - Written Exam (one hour annually).
e. Crew Resource Management Training.
    - Classroom Instruction (two hours annually).
f. Egress Training (less than thirty minutes annually, often done in conjunction with a flight).

Nearly twenty-eight hours of training are required of aircrew by the Navy alone. These hours do not include additional training required by the Marine Corps, nor does it include the flights related to some of these periods of instruction, such as NATOPS and instrument checks.

Under the Marine Corps, all higher directives come from the Deputy Commandant of Aviation (DCA). Aviation Plans and Policies (APP), made up of several sections that focus on areas such as budgeting and specific programs, acts as the conduit between the DCA and the other agencies by making recommendations and assigning tasks to lower commands. APP gives Training and Education Command's Aviation Training Branch (ATB) guidance for training directives. ATB directs the development of Training and Regulations (T&R) Manuals, oversees the conduct of the Marine Aviation Training Systems Squadrons, and most recently has directed the development of an Aviation Career Progression Model (ACPM). Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) is designated as the T&R manager for all Marine Corps Type/Model/Series aircraft. As such, MAWTS-1 develops both the flight and ground syllabus for each aircraft. MAWTS-1 has also been given the responsibility of developing courseware for ACPM, resulting in over eight hours of additional training annually.

Specific T/M/S Aircrew Training

In addition to the training required of all aircrew, each type/model/series aircraft has its own training requirements. This study analyzes the training requirements for CH-46E and F/A-18D aircrew. The CH-46E and F/A-18D were used as a sample due to the simplicity of the CH-

46E and the complexity of the F/A-18D, essentially a low and high sample to demonstrate minimum and maximum required training times.

For a CH-46E pilot, the CH-46E Course Catalog assigns the following Academic Syllabus to be integrated into the various blocks of training:

a. Core Skill Basic (15.0 hours of lectures, 2.0 hours of individual training, 83.0 hours of self-paced readings).
b. Core Skill Advanced (30.0 hours of lectures, 74.0 hours of self-paced readings).
c. Core Skill Plus (19.0 hours of lectures, 1.0 hours of individual training, 145.0 hours of self-paced readings).
d. Section Lead (5.0 hours of lectures, 20.0 hours of self-paced readings, 2.5 hours of chalk-talks).
e. Division Lead (6.0 hours of lectures, 21.0 hours of self-paced readings, 2.0 hours of chalk-talks).
f. Assault Flight Leader (4.0 hours of lectures, 4.0 hours of self-paced readings).
g. Air Mission Commander (4.0 hours of lectures, 15.0 hours of self-paced readings, 1.5 hours of chalk-talks).
h. Required Annual Training (10.0 hours of lectures).[17]

The following is required ground training for a CH-46E crewchief:

a. Core Skill Basic (23.0 hours of lectures, 10.5 hours of individual training, 20.0 hours of self-paced readings).
b. Core Skill Advanced (4.0 hours of lectures, 8.5 hours of individual training, 20.0 hours of self-paced readings).
c. Core Skill Plus (8.0 hours of lectures, 10.0 hours of individual training, 10.0 hours of self-paced readings).[18]

While there are only 10.0 hours of annual lectures (pilot) that are mandatory for all pilots, it is understood that pilots are to continually progress through the Training and Readiness (T&R) syllabus which entails additional lectures. The CH-46E pilot progression model (figure 4) demonstrates that only a small percentage of the squadron will be made up of pilots who have previously completed all training and require only that training which is refreshed annually.[19] The pilots in this category are typically ones who have been in the squadron for over three years (senior captains) or the returning field grade officers who may have had previous qualifications.

However, many field grade pilots return to the fleet in need of some refresher training. Based off the table of organization for a CH-46 squadron, only 15% of the squadron will hold a qualification of division leader or higher.

The remaining 85% of the squadron will conduct Core Skills and/or section leader training. From the time that a pilot is in a squadron for four months until he reaches the forty-four month mark, he/she will be in four or more of these training blocks simultaneously. This study takes the total number of hours of training for all levels, with the exception of division leader and higher, and averages them over a three year period to give a rough approximation of 142 hours of ground training annually. The model is very similar for a crewchief (figure 5), averaging thirty-eight hours of ground training annually over a three year period.

Unlike the CH-46E career progression model, F/A-18 aircrew will typically only conduct training within one level of training at a time (Core Skill Basic, Advanced, Plus – see figure 6). The training within each level is complex and detailed, requiring mastery before proceeding to the next level. A standard F/A-18 squadron's table of organization includes nineteen pilots and weapons system officers, with half of them designated as section leaders, the first designation within the Core Skill Advanced block. Section lead is typically attained within the first twenty-two months in a squadron.[20] In that twenty-two month time period an individual can expect to complete the following academic package:

a. Core Skills (58 hours of lectures, 8.5 hours of chalk talks*, 94 hours self-paced reading).
b. Mission Skills (59 hours of lectures, 20 hours of chalk talks, 38 hours self-paced reading).

* Chalk talks are not defined specifically by the Training and Readiness manual or the course catalog. They are generally understood to be an informal lecture method utilizing dry-erase boards and models to illustrate learning objectives in conjunction with two-way dialogue between student and instructor, as compared to the more formal lecture methods that involve one-way dialogue.

c. Core Plus Skills (8 hours of lecture, 10 hours of chalk talks, 21 hours self-paced reading).
d. Section Leader (review of previous lectures, 7 hours of chalk talks, 3 hours self-paced reading).[21]

Over the first two years in a squadron, a pilot will average over 163 hours conducting F/A-18 specific academic training. In addition to academic training, aircrew can expect over twenty hours of simulator training, increasing the annual average to 173 hours of ground training. The estimated average ground training time is similar to that of a CH-46 pilot (172), equating to 30-33% of the time available.

Maintenance Training

The Department of Navy and TECOM provide guidance for training maintainers as well. The Naval Aviation Maintenance Program (NAMP), developed by the Commander Naval Air Forces, is the senior directive for conducting maintenance training. The Marine Corps derives its Individual Training Standards System/Maintenance Training Management and Evaluation Program (ITSS/MATMEP), from the NAMP, specifying responsibilities for its execution within Marine Corps Organizations.

Chapters six and ten of the NAMP outline some of the maintenance training requirements. The NAMP categorizes training as formal and in-service training (IST). Formal training occurs at schoolhouses, and therefore will not be accounted for in this study. IST is "training conducted by fleet activities to complement formal training and increase professional safety."[22] IST includes lectures, film, required reading, interactive multi-media instruction, personnel qualifications standards, and on the job training. The Marine Corps further standardizes this learning process through the ITSS/MATMEP. ITSS/MATMEP "identifies tasks, skills, and knowledge requirements of each military occupational specialty (MOS)" and

incorporates an exam "so a complete evaluation can be made of the individual's "hands-on" performance capability and technical knowledge."[23]

Several difficulties arise when trying to determine how much time this training actually requires. Because on-the-job training is such a vital part of a maintainers training, it is difficult to determine how much additional time might be spent on a maintenance action to ensure adequate training is provided or what time may be allotted to a simulated maintenance action used for training purposes. Also, computer based training is difficult to gauge since it proceeds at an individual level. Most importantly though will be the different training required by each individual MOS and the impact that collateral duties, such as tow tractor driver, might have on an individual's training requirements.

The NAMP does delineate twenty-four training modules required of all personnel at the indoctrination level to be refreshed as required with the exception of the Egress/Explosive System Checkout Program, which is required every six months.[24] Additionally, the NAMP lists twenty-two annual course requirements, two of which must be completed quarterly, to satisfy the Navy Occupational Safety and Health program requirements.[25] However, the closest approximation to what the totals for training comes from a survey conducted by the author of this paper. Seventy-one percent of the fleet maintainers who responded to the question "How many hours/week (average) do you spend conducting MOS related ground training" responded with three to four hours or more (figure 7). Over the course of a year, a maintainer can expect to spend 150 to 200 hours annually conducting MOS related training.

Impact on Aviation Readiness

To understand the impact that ground training has on aviation readiness it is necessary to look at aviation readiness from the stand-point of the aircrew as well as the maintainer. For the

aircrew, aviation readiness is discussed primarily in terms of proficiency and currency. Proficiency is defined as "a measure of achievement of a specific skill. Re-fly factors establish the maximum time between demonstration of those particular skills."[26] Currency is "a control measure used to provide an additional margin of safety based on exposure frequency to a particular skill. It is a measure of time since the last event demanding that specific skill... For example, currency determines minimum altitudes in rules of conduct based upon the most recent low altitude fly date."[27]

For a unit, readiness is determined by the Core Competency Resource Model (CCRM) and expressed in terms of "T-Levels." A T-2 level indicates a mission capable squadron.

> The CCRM was developed for HQMC to validate the resources (flight hours) required for a squadron to obtain and maintain CORE Skill Proficiency. This model captures all flight events contained within the CH-46E Training and Readiness manual, NAVMC 3500.XX dtd 24 Mar 2008 and the MAWTS-1 Course Catalog. An additional reference is the Marine Corps Flying Hour Program Management MCO P3125.1.
>
> The model reflects a 12 month snapshot out of a 36 month training cycle. It includes refly factors for individual events and a 20% factor for training anomalies (weather, range, aircraft cancellations etc.)[28]

The CH-46E CCRM model states that a unit needs to maintain twenty-five qualified aircrew (or twelve crews) and fly 2977.3 hours annually to maintain a T-2 status (figure 8) .[29] F/A-18 squadrons are required to maintain seventeen pilots and fly 4113.2 hours annually to maintain a T-2 status (figure 9).[30] These figures would indicate that each CH-46E pilot would fly roughly 248 hours annually and each F/A-18 pilot would need to fly 242 hours annually.

Readiness may also be discussed in terms of safety. The NATOPS General Flight and Operating Instructions states that all pilots must fly a minimum of forty hours every 6 mos/100 hours annually and further breaks it down into a minimum of 6 hours each of instrument and night time every 6 months and 12 hours each annually.[31] However, a recent study conducted by

the Center for Naval Analysis (CNA) determined that flying roughly twenty hours every thirty days was necessary to decrease the chance of an aircraft mishap. CNA made this determination by studying a history of class A mishaps and looking at the recent flying histories of the pilots involved. Fairly conclusive results for the F/A-18 and AV-8B demonstrated that the mishap rate declined significantly between sixteen and twenty-five hours.[32] Results for the CH-46E and AH-1/UH-1 communities indicated similar numbers, though there were an insufficient number of mishaps for any definitive results.[33] Thus, a pilot needs a minimum of 240 hours annually to not only be mission capable, but also to complete his mission safely.

Aviation readiness in terms of maintenance is based on the availability of aircraft to fly the proposed missions. For every flight hour flown, a certain number of maintenance man hours will be necessary to keep the aircraft healthy. Maintenance man hours are based on both scheduled and unscheduled maintenance. Scheduled maintenance includes such things as daily inspections, flight hour inspections, engine washes, etc... A CH-46E requires approximately twenty-seven maintenance man-hours for every flight hour flown, equating to 80,982.5 maintenance man hours to maintain a T-2 level squadron.[34] Similar numbers were found on the F/A-18C, averaging nineteen maintenance hours per flight hour, or 78,150.8 maintenance man hours annually.[35] A typical CH-46E squadron has approximately 122 maintenance personnel, which means that each maintainer would need to provide 664 maintenance man-hours annually.[36] An F/A-18 squadron has approximately 120 maintainers who would have to provide approximately 651 hours annually.[37]

The recent fleet survey conducted for this study revealed that nearly 75% of the responders dedicate at least seven hours daily to the conduct or supervision of maintenance (figure 10); this would equate to 1,519 hours annually, or twice the amount expected based on

maintenance man-hour predictions. On the job training and maintenance actions that require multiple maintainers simultaneously may account for this difference. Regardless, out of a 1,736 hour year 87% of it is dedicated to maintenance actions.

Other Time Factors

Each flight has other implications for pilots and aircrew. For every flight flown there is a certain amount of preparation, brief, and debrief time associated with it. The survey conducted for this study indicated that a typical flight for a CH-46E pilot is three hours in length with roughly three hours of preparation, brief, and debrief necessary. This was a low result compared to the F/A-18 (and HMLA) community which was three to four hours of preparation for every hour of flight time. Over the course of a year a CH-46E pilot would spend an additional 240 hours completing flight related administrative duties, while an F/A-18 pilot may spend closer to 720 hours completing flight related duties outside of the cockpit.

Pilots are also required to perform collateral duties, such as administration officer, adjutant, logistics officer, etc... Across the fleet these jobs take up the preponderance of an aviator's time. Survey results indicated that 40% of the company grade officers spent twenty-one to thirty hours a week on their ground job and 43% of the company grade and 78% of the field grade officers spend thirty-one to forty hours a week on their ground job (figures 11 and 12). Thirty-one to forty hours a week equates to 1488-1920 hours annually on their ground jobs alone; this is well over 100% of the time a standard day would allot annually prior to conducting any flight or ground training.

Summary of Aviation Statistics

Combining all of the training, flight time, and other duties gives a total of:

	USMC Trng	Avn Gnd Trng	Flt Time	Flt Duties	Gnd Job	Total
CH-46E Pilot	350	172	240	240	1500	2262
F/A-18 Pilot	350	173	240	720	1500	2743
Maintainers	350	150-200 (175)			1520	2045

These figures are 118% to 158% of the allotted time to train. Personnel would have to work twelve hour days on a continual basis in order to accomplish all training; placing them at higher risk for a mishap due to fatigue.

Analysis

Over thirty years ago Major Cobble concluded that the Marine Corps' training program demands more out of its Marines than what a standard day would allow. Colonel Collins had also pointed out that technical training does not get easier as technology advances, but more complex systems would require more training to maintain even a rudimentary skill level. Given these two conclusions from previous studies and the advancement of technology over the past twenty years, one would assume that the Marine Corps would find ways to reduce the amount of training required outside of a Marine's MOS. One might also assume that if a new training requirement is developed, it must replace an existing one in order to maintain balance with priorities outside of training, but this has not been the case.

Since Major Cobble's 1974 study the Marine Corps has continued to increase training requirements upon its Marines. Beginning in the 1980s with the development of the Marine Corps Common Skills program and continuing today with such programs as the Marine Corps Martial Arts Program, Terrorism Awareness, Information Awareness, Personally Identifiable Information, and numerous Semper Fit classes, the amount of training required to simply be a Marine has grown tremendously. Some of the additional training has been passed down as a

requirement from the Department of Navy or the Department of Defense, but the Marine Corps has deemed it necessary to make many of these requirements more difficult to complete by mandating that these training evolutions be conducted more frequently than required by higher.

While increasing training requirements, the Marine Corps simultaneously reduced the effectiveness of its training. A primary problem with training today is the same as it was over twenty years ago; training lacks quality and is unable to keep Marines interested.[38] While the hum-drum lecture and class-style training periods still occur, the Marine Corps has given its Marines a new option with on-line training courses for most of its annual and pre-deployment training. On-line courses have proven to be highly ineffective. Most Marines consider on-line courses as nothing more than a "check in the block" and end up clicking through them as quickly as possible to complete them. On programs where it is not possible to click through quickly, Marines will let the module play in the background while completing more pressing work, then use "gouge" that may have been passed around to complete the "quiz" at the end of the module. Additionally, there are an inadequate number of computer resources on which to conduct the training. In a maintenance shop of 15 to 30 Marines there may be two or three computers for all of them to use. Most of these computers are loaded with maintenance programs that are necessary to keep aircraft discrepancy books up to date, rendering them unavailable for training. In short, time spent on on-line courses and lectures without any type of practical application or audience participation is time wasted.

Just as annual training requirements have increased, so have the pre-deployment training requirements. Today's battlefield is ever-changing; the threat environment faced by a unit a year ago in a place such as Iraq or Afghanistan may change drastically by their next deployment to the same or similar area. As we adjust our tactics, techniques, and procedures, so does the

enemy. The Marine Corps has dealt poorly with these changes by continuously adding training for all Marines going in theater without re-evaluating old threats or determining who might or might not be faced with specific threats. Pre-deployment training attempts to give all Marines the ability to combat all threats regardless of their MOS or place in the Marine Air Ground Task Force structure. This time inevitably has to be paid back in either the quality of instruction received, in which case one might ask why conduct the training at all if it is only being paid lip-service, or the units will lose precious time to focus on the skills necessary to complete their mission within the Marine Air Ground Task Force.

All Marines are impacted by additional training requirements, however aviation units have felt an additional strain. Due to the complexity of aviation operations and the ever-increasing technological advances to aircraft as well as maintenance tools, more training is required within one's MOS in order to maintain proficiency. In aviation, proficiency is not only tied to the ability to accomplish the mission technically, but also to the ability to accomplish the mission safely. Squadrons are then faced with a dilemma: complete the additional training and place their aircrew at greater risk of a mishap, or "cut corners" on training not directly tied to their primary mission. Most squadron leaders are unwilling to accept the additional risk to either their aircrew or the mission and will find ways to complete the training that may not meet the letter or intent of the law.

Squadrons have felt not only the burden of additional Marine Corps training, but additional aviation training as well. Most of the additional aviation training is necessary due to advancements in technology, but Marine Aviation must be cautious of additional training that is not tied to these advancements. Programs such as the Aviation Career Progression Module must be scrutinized carefully. The questions "What gap has necessitated this training?" and "What

will the Marine Corps gain from this training and at what cost?" must be examined carefully. The purpose of the Aviation Career Progression Module is to "to enhance professional understanding of Marine Aviation and the Marine Aviation Ground Task Force (MAGTF) and ensure individuals possess the requisite skills to fill battle command and battle staff positions in support of the ACE and the MAGTF in a joint environment."[39] While it might be nice for a junior officer to understand how to be an effective member of a battle staff, field grade officers typically hold these positions. Junior officers need to be focused on mastering their aircraft and how it fits within the six functions of Marine Aviation. While it may be a well-intended program, the adage "if it isn't broke, don't fix it" may apply.

Training and MOS proficiency are not the only competitors a squadron faces for its time. The largest time strain comes from the daily duties necessary to run a squadron. Aircrew find themselves spending the preponderance of their time fulfilling non-MOS ground job responsibilities in shops such as administration, intelligence, operations, logistics, safety, and maintenance. Certain jobs, such as the Aviation Safety Officer and some operations officer positions, require an individual with aviation knowledge. For other jobs, such as legal officer, intelligence officer, logistics officer, and even some of the schedule writers within the operations department may be handled by anyone. Squadrons may be able to fill some of these positions internally by giving operations and administration clerks additional tasks, but the Marine Corps should look at other alternatives as well. The 202k plus-up plan may allow for additional squadron personnel, and the hiring of contractors in some areas may reduce the strain on aviation units.

RECOMMENDATIONS

The following are some recommendations to improve training and readiness for Marine aviation units.

Recommendation 1: Conduct a further study on this topic. Consider utilizing contractor or other experts, such as the Center for Naval Analysis, to aid in the research.

Discussion: The strain of training is felt Marine Corps wide. Informal polling of officers in MOSs outside of aviation found that the few other communities are able to complete all training as required/intended by Headquarters Marine Corps. Resources for this topic were difficult to find and comb through. Training programs and orders seldom include all training and often time do not assign an amount of time necessary to complete them. The survey and results conducted for this study were not professionally conducted, which may also skew some results.

Recommendation 2: Re-evaluate Marine Corps Common Skills.

Discussion: Current Marine Corps Common Skills training requires skills that are well beyond a common Marine Corps unit's mission and are infantry focused. Basic items such as knowing how to wear a uniform, understanding some administrative functions, and shooting table of organization weapons are reasonable training goals. However, there are numerous skills that pertain to specific MOSs and equipment that are found only in particular units, such as heavy machine guns or grenade launchers, making training in these areas unnecessary for all Marines.

Recommendation 3: Review annual requirements.

Discussion: A number of annual requirements pertain to a group of specific individuals, such as substance abuse classes and motorcycle safety. Training on these topics should be done upon checking in to a unit and then refreshed only if they pertain to the individual. Some may argue that it is important for leaders to understand these issues, but if an individual is in a leadership

position he/she probably already knows the resources available. Resource training would be more appropriate on the junior-leader level at the required PME schools. Additionally, much of the Semper Fit training is recruit-type training and should remain there. Finally, many of the Marine Corps Orders are more restrictive than superceding orders. In the case where Department of the Navy or Department of Defense orders leave an unspecified periodicity to training, it should be considered to be given during certain times within a Marine's time on station. One possibility is to conduct that training as part of the check-in process to a unit.[40]

Recommendation 4: Re-evaluate pre-deployment training requirements.

Discussion: Similar to MCCS, Block I and Block II training has placed an undue focus on infantry tactics. Examine the roles of individuals while deployed and train as appropriate.

Recommendation 5: Re-evaluate the cycle in which training must be conducted.

Discussion: Most of the Marine Corps' common ground training is conducted on an annual basis. However, the Commandant of the Marine Corps has stated that he desires to get the Marine Corps back on a 1:2 dwell ratio with the standard deployment of six to seven months. This would equate roughly to an eighteen to twenty-one month deployment cycle. By adjusting most of the requirements to the same cycle as the deployments, units would have greater flexibility in scheduling training, reducing the requirement for waivers and ensuring quality training is conducted in a timely manner.

Recommendation 6: Develop unit training management (UTM) mobile training teams (MTT).

Discussion: One of the major challenges of training is the understanding of various orders and collating them into a coherent training plan. UTM MMTs would be able to conduct a road show and visit units, educating training officers on the orders, instructions, and how best to conduct

training. UTM MMTs would also be available to conduct some of the annual training requirements, reducing the burden on the units.

Recommendation 7: Re-evaluate the need for the Aviation Career Progression Module.

Discussion: A better use of ACPM is to present it as a course for officers attached to MAG or MAW staffs. The specific T/M/S course catalogs are adequate for teaching members of the Aviation Combat Element how to best integrate their weapon system within the MAGTF.

Recommendation 8: Utilize 202K plus-up in conjunction with contractors to give squadrons more robust administrative, logistics, communications, and operations departments.

Discussion: The preponderance of a squadron pilot's time, and arguably most senior enlisted maintainers, is consumed by ground jobs and/or collateral duties. Additional personnel in S-1 would provide administrative duties in the adjutant's role. More S-3 clerks would provide more range coaches, MCMAP, and other ground training officers as well as free up officers from schedule-writing duties and allow them to focus on larger projects. A larger S-4 shop would provide a dedicated embarkation officer who is not a pilot as well as be able to assist in some of the other collateral duties, such as SACO, senior watch officer, etc..., and a dedicated S-6 shop would provide adequate technical support while freeing up a Marine to practice in his/her MOS (S-6 Marines are often pulled from the maintenance shops) as well as an officer. Finally, these additional Marines would be trained in airfield defense as part of their pre-deployment training, allowing maintainers and aircrew to focus on fixing and flying aircraft, enhancing overall mission readiness. An additional source of personnel may come in the form of government contractors. Many of the Marine Corps' school houses already utilize contractors to assist with administrative and operations department functions. It may not be feasible to place contractors in battalion/squadron-sized units due to deployment cycles, but having contractors fill some of

the higher level headquarters billets would allow for more Marines to be pushed down to the operational level.

CONCLUSION

Marines in China during the 1920s demonstrated the validity that every Marine needs to be a rifleman when squadrons were not collocated with ground units and had to provide their own airbase defense.[41] However, there is a difference between being able to provide self-defense as they did in 1927 and the ability to conduct patrols and vehicle checkpoints, which today is required of all units, to include aviation. By adding more training the Marine Corps has lowered the mission readiness of its units.

> The high personnel costs associated with the All Volunteer Force and the ever increasing costs of procuring modern weapons systems have combined to place a severe strain on static or barely increasing defense budgets. In response, DOD, OMB, and Congress have mandated certain "efficiencies" by slicing the resources of the individual skill training base so that more personnel remain for longer periods as "productive" members of the operating forces. At the same time that such "efficiencies" are being effected, the complexity of modern weapons systems continues to increase vis-à-vis a static or only fractionally increasing educational level on the part of entering service personnel. Service research into new and innovative instructional strategies has helped to slow the divergence of these two trends to some extent, but the practical upshot has been the export of training requirements from the individual skill training process into the unit training process. That unit process is neither appropriately organized nor sufficiently resourced to accept the additional load without paying a price in effectiveness.[42]

Regardless of MOS, Marine Corps aviators and aviation maintenance personnel consider themselves Marines first and foremost. The success of the MAGTF stems from common training all Marines receive as riflemen. The qualities of a rifleman are instilled in Marines during introductory training at boot camp, Marine Corp Combat Training, Officer Candidate School, and The Basic School and continue throughout a Marine's career. Reviewing rifleman training is important, as is reviewing other aviation-related training. This ground training,

however, must be tempered to ensure squadrons can successfully complete their missions at a high-level of proficiency. Marines must maintain the ability to be a rifleman, but the priority for a squadron has to be aviation operations and the safe execution of the mission.

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APPENDIX A: Survey Questionnaire

The following questionnaire was distributed to sixteen squadrons of all Marine Corps type/model/series aircraft. 178 Marines responded. Figures 7, 10, 11, and 12 in Appendix B are derived from the responses of the 178 survey participants.

QUESTIONNAIRE:

This survey is being conducted as part of research for a current Marine Corps University Master of Military Studies thesis. The goal of this survey is to better understand what fleet squadrons focus their time and efforts on. All responses are anonymous. Your participation and candid responses are greatly appreciated.

1. Rank:
    a. E1-E3
    b. E4-E5
    c. E6-E7
    d. E8-E9
    e. WO1-CWO3
    f. CWO4-CWO5
    g. O1-O3
    h. O4-O5

2. MOS:
    a. Pilot/NFO
    b. Enlisted Aircrew
    c. Maintenance personnel

3. Community:
    a. HMM
    b. HMH
    c. HMLA
    d. VMM
    e. VMGR
    f. VMQ
    g. VMA

h. VMFA

How many days away from your home-station have spent this past year due to:

4. Pre-deployment work-ups:
    a. <14
    b. 14-30
    c. 31-60
    d. >60

5. Overseas deployment:
    a. <30
    b. 30-90
    c. 91-180
    d. 181-365

6. Deployment for training:
    a. <14
    b. 14-30
    c. 31-45

If you are not aircrew proceed to page 8

7. If you are a pilot/NFO or enlisted aircrew, how many hours have you flown in the last year?
    a. <100
    b. 100-200
    c. 201-300
    d. >300

8. If you are a pilot/NFO or enlisted aircrew, how many flights have you flown in the last 60 days?
    a. <10
    b. 10-20
    c. 21-30
    d. >30

9. If you are a pilot/NFO or enlisted aircrew, how many hours have you flown in the last 60 days?
    a. <20
    b. 20-40
    c. 41-60
    d. >60

10. If you are a pilot/NFO or enlisted aircrew, did any of the following effect your availability for flight ops in the last 60 days?

Illness - yes/no
-how many days?
Family related issues - yes/no
-how many days?
Ground training requirements (rifle range, MCMAP, gas chamber, etc…) - yes/no
-how many days?
MOS related school - yes/no
-how many days?
Non-MOS related school - yes/no
-how many days?
Watch standing duties - yes/no
-how many days?
Annual leave - yes/no
-how many days?

11. If you are a pilot/NFO or aircrew, do you complete the appropriate classes per your T/M/S course catalog prior to stage completion?
    a. Yes
    b. No

12. If you are a pilot/NFO or aircrew, how many hours (average) do you spend during a single flight?
    a. 1-2
    b. 2-3
    c. 3-4
    d. >4

If you are not a pilot/NFO proceed to page 6.

13. If you are a pilot/NFO, how many hours (average) do you spend in preparation before a flight brief?
    a. <1
    b. 1-2
    c. 2-3
    d. >3

14. If you are a pilot/NFO, how many hours (average) do you spend in a flight brief?
    a. <1
    b. 1-2
    c. 2-3
    d. >3

15. If you are a pilot/NFO, how many hours (average) do you spend debriefing?
    a. <1
    b. 1-2
    c. 2-3

d. >3

16. If you are a pilot/NFO, how many hours/week do (average) do you spend working on your ground job?

a. 1-10
b. 11-20
c. 21-30
d. 31-40

If you are a pilot or NFO please proceed to question #20.

17. If you are enlisted aircrew, how many hours (average) do you spend prepping for a flight (includes aircraft inspections, aircrew briefs, etc...)?

a. 1-2
b. 2-3
c. 3-4
d. 4-5

18. If you are a maintainer, do you work in:

a. Flight line/Power line
b. Avionics
c. Airframes
d. Tool room
e. Flight equipment/Seat shop
f. Quality Assurance
g. Maintenance Control
h. Phase crew

19. If you are a maintainer, how many hours (average) do you spend on a daily basis performing/supervising maintenance?

a. 1-3
b. 4-6
c. 7-9
d. 10-12

20. How many hours/week (average) do you spend conducting MOS related ground training (i.e. Aviation Career Progression Model, MATMEP, LASER safety, HAZMAT, GFE, PPE, etc...)?

a. 1-2
b. 3-4
c. 5-6
d. 7-8

21. How many hours/week (average) do you spend conducting non-MOS related ground training (MCMAP, PT, BST, etc...)?

a. 1-2
b. 3-4

c. 5-6
d. 7-8

22. How many hours a month do you spend doing required PME (includes MCIs, officer PME schools and squadron PME sessions)?
    a. <5
    b. 5-15
    c. 16-30
    d. >30

23. How many hours a month do you spend counseling/in counseling (to include writing pro/cons and FITREPs)?
    a. <5
    b. 5-15
    c. 16-30
    d. >30

24. For MCMAP, are you:
    a. Web-belt
    b. Tan belt
    c. Grey belt
    d. Green belt
    e. Brown belt
    f. Black belt

25. How many days did it take to complete your current level MCMAP belt?
    a. <10
    b. 10-30
    c. 31-45
    d. >45

26. How many hours a month do you conduct MCMAP sustainment training?
    a. 0
    b. 1-5
    c. 6-10
    d. >10

27. Have you been to the rifle range in the past year? Yes/no

28. How many days did you spend completing the rifle range (to include dry-fire days)?
    a. <3
    b. 3-6
    c. 7-10
    d. N/A

29. Have you been to the pistol range in the past year? Yes/no

30. How many days did you spend completing the pistol range?
    a. <1
    b. 1-3
    c. 3-5
    d. N/A

31. Have you been to the gas chamber in the past year? Yes/no

32. How long did the gas chamber take to complete (to include classes)?
    a. <1
    b. 1-3
    c. 3-5
    d. N/A

33. How many days have you spent in the past year conducting safety stand-downs?
    a. 1
    b. 2
    c. 3
    d. 4 or more

34. How much time/year do you spend in preparation for the basic skills test?
    a. <1 hr
    b. 1-5 hrs
    c. 6-10 hrs
    d. N/A

35. Are there any factors that inhibit the performance of your job?

36. What percentage of time do you think should be spent on MOS related training and what form should it be (i.e. lecture, CBT, practical application)?

37. What percentage of time do you think should be spent on non-MOS related training and in what form should it be?

Comments: (Please use this block to add any amplifying information or discuss other requirements of your time not previously mentioned)

APPENDIX B: FIGURES

Requirement	Sustainment Interval	Personnel
Rifle Marksmanship Pistol Marksmanship	Annual (Fiscal Year)	E1-E6, O1-O3 E7-E9, WO1-CW03, O4-O5
Physical Fitness Test Combat Fitness Test	Semi-Annual	All Marines
Marine Corps Common Skills	Annual	E1-E7, WO1-CWO2, O1-O3
NBC Training	Annual	All Marines
Terrorism Awareness	Annual	All Marines
Operational Risk Management	Annual	All Marines
Trafficking in Persons	Annual	All Marines
Combat Water Survival	CWS4 (Min) 1 Yr	All Marines
STD/HIV, Suicide Awareness, Alcohol/Substance Abuse, Tobacco Cessation/Prevention, 3 Hours of	Annual	All Marines
Sexual Assault Awareness/Prevention	Annual	All Marines
Sexual Harassment	Annual	All Marines
Equal Opportunity	Annual	All Marines
Hazing	Annual	All Marines
Heat Injury Prevention	Annual	All Marines
Operational Security	Annual	All Marines
Information Awareness	Annual	All Personnel (with access to
Code of Conduct	Annual	All Marines
Personally Identifiable Information	Annual	All Marines

Figure 1: USMC Annual Training Requirements.[43]

FORMAL TRAINING REQUIREMENTS		
Formal training requirements are established by Marine Corps orders and directives. Users should consult applicable directives to ensure they have a complete and current listing of training requirements.		
Training Requirement	**Per**	**Time Requirement**
Marksmanship Rifle: Pvt-GySgt WO-Capt (less than 13 yrs) Pistol: Pvt-MGySgt/SgtMaj (If assigned by T/O) WO-LtCol	MCO 3574.2H	annually Est: 60 hours annually Est: 20 hours
Physical Fitness Physical Training (all Marines) Physical Fitness Test (all Marines under 46 years of age)	MCO 6100.3J	3 times per week (3 hrs per week) semiannually 1 hour/PFT
Combat Water Survival Training (Swimmer's ability determines requalification times)	MCO 1500.52A	CWS4 every 2 years CWS3 every 3 years CWS2 every 4 years CWS1 every 5 years WSQ no requalification required
Marine Battle Skills Training (MBST)	MCO 1500.51A	Number of hours dedicated to MBST will vary based on the type of unit; i.e., an infantry battalion accomplishes the bulk of its MBST training during normal unit training.
Nuclear, Biological, and Chemical (NBC) Defense Training (gas chamber)	MCO 3400.3E	Est: 6 hours annually
Leadership	MCO 5390.2D	Est: 4 hours annually
Law of Land Warfare	FM 27-10 w/C 1	Est: 2 hours annually
Substance Abuse	MCO P5300.12 w/C 1-4	Est: 1 hour semiannually
Troop Information	MCO 1510.25C w/C 1	Est: 8 hours annually
Sexual Harassment	MCO 5300.10A	1 hour annually
MCI study/test	MCO 1550.3M	Est: 1 hour weekly

Figure 2: Unit Training Management Guide Annual Training Requirements.[44]

ANCILLARY TRAINING REQUIREMENTS

The majority of these additional, secondary training requirements fall under the troop information category. This listing is not inclusive and does not represent additional demands placed on individual units by their higher headquarters, e.g., Marine expeditionary force, division, and wing. Users should consult applicable directives for a complete and current listing of requirements.

Training Requirement	Per	Training Requirement	Per
Suicide Awareness	ALMAR 340-94 MCO 6200.4	Religious Ministries	SECNAVINST 1730.7 MCO 1730.6C
Team Marine	ALMAR 141/94	Insurance Counseling	SECNAVINST 1740.2
Informal Resolution System	ALMAR 149/94	USMC Health Prom Prog Semper Fi	MCO 6200.4
Driver Improvement	MCO 5100.19C w/C1-7	Off-Duty Employment	MCO 5330.3D w/C1
Privacy Act	MCO P5211.2A w/C1-2 Erratum C1-4	Exchange Services	MCO P1700.27 w/C1
Article 137 UCMJ	UCMJ	MWR	MCO 1700.27 w/C1
Standards of Conduct	SECNAVINST 5370.2J	Legal Assistance	JAGINST 5800.7C w/C1-2
HIV/AIDS	SECNAVNOTE 5300	Casualty Assistance	MCO P3040.4D
Code of Conduct	SECNAVINST 1000.9	American Red Cross	MCO 1700.21
Personal Financial Management	SECNAVINST 1740.2 MCO P5800.8C	Health Care Benefits/Champus	SECNAVINST 6320.8
Survivor Benefit Plan	MCO P1741.11B	Club System	MCO P1700.27 w/C1
FDA and VA Insured Loans	VA Pam 26-4/6	Non-Naval Medical and Dental Coverage	NAVMEDCOMINST 6320.1
Navy Relief	ALMAR 292/87	DEERS	MCO P5512.11A w/Erratum
Allotments	DFAS-KC 7220.45R	Family Programs	MCO P1700.24A
SGLI	MCO P1741.8C	Sponsorship Program	MCO 1320.11D
BAS	MCO 10110.47	Space A Travel	MCO 1320.11D
Passenger Transportation	JTR MCO P4600.7C w/C1-7	Transportation of Personal Property	MCO 4600.7C w/C1-7 and JTR
Equal Opportunity/ Human Relations	MCOs 1700.24A, 5300.10A/ALMARS 288/91, 50/92	Food Service Patron Education	MCO P10110.34E
		Voluntary Education	MCO 1560.26 w/C1/ 27A/28B

Figure 3: Unit Training Management Guide Annual Training Requirements (cont).[45]

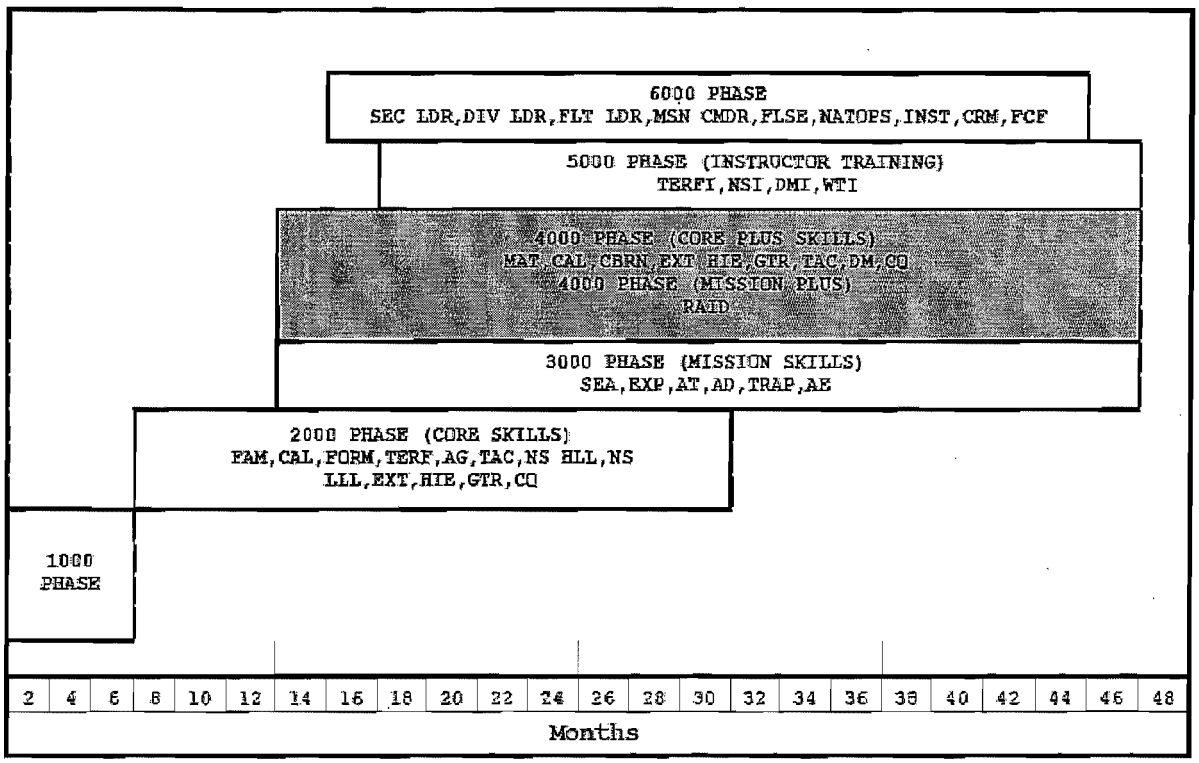

Figure 4: CH-46E Pilot Progression Model.[46]

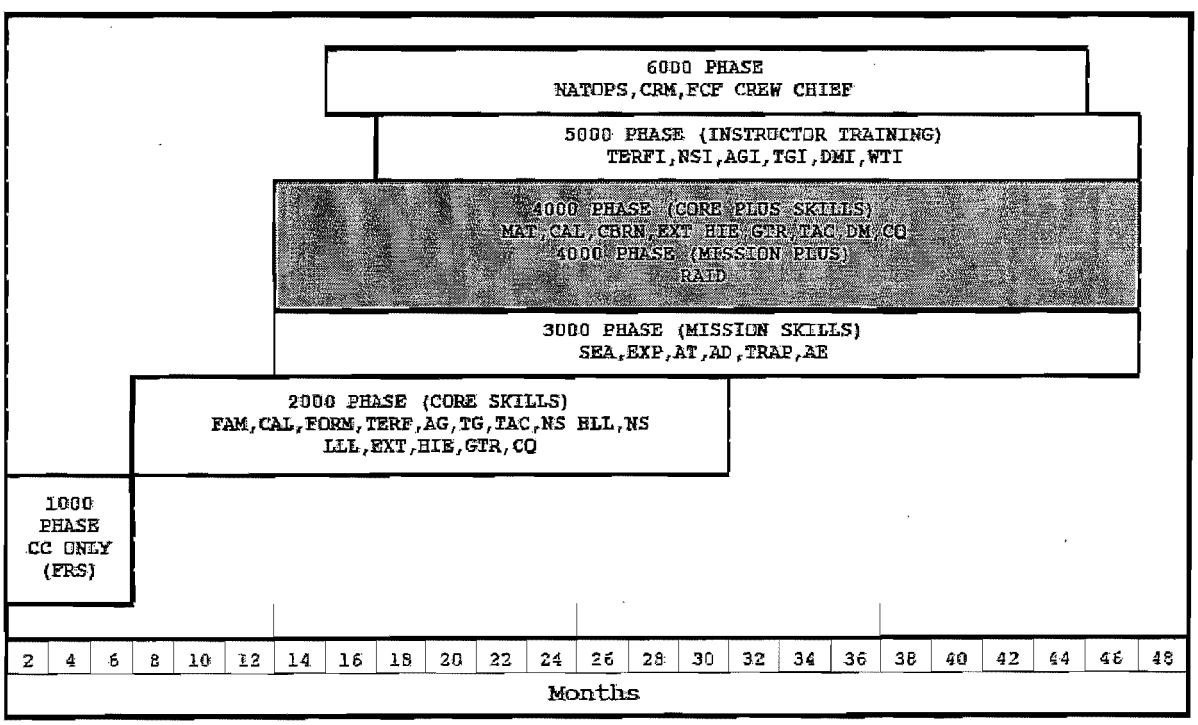

Figure 5: CH-46E Crewchief Progression Model.[47]

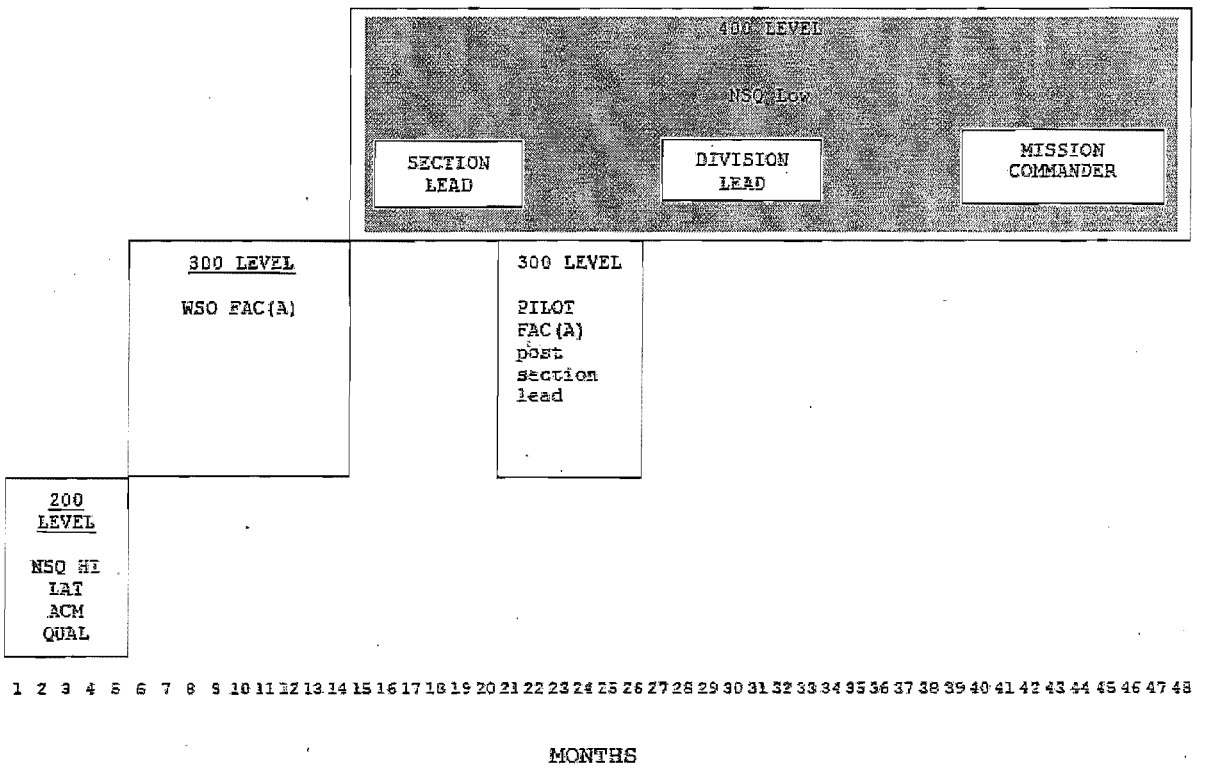

Figure 6: F/A-18D Pilot Progression Model.[48]

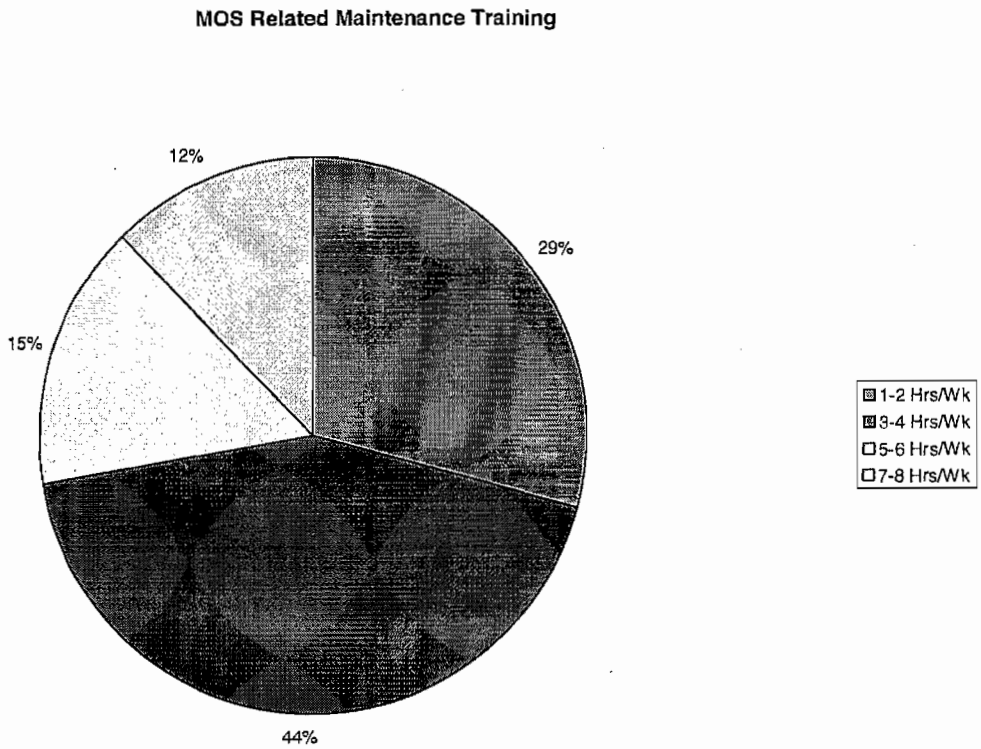

Figure 7: Results of Survey; "How many hours do you spend weekly on non-MOS related training?"

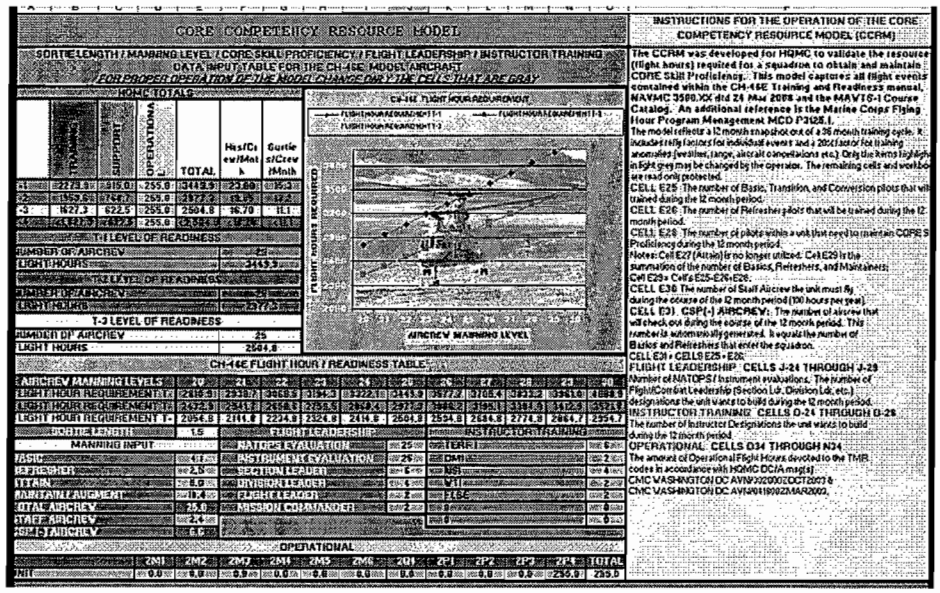

Figure 8: CH-46E Core Competency Resource Model.[49]

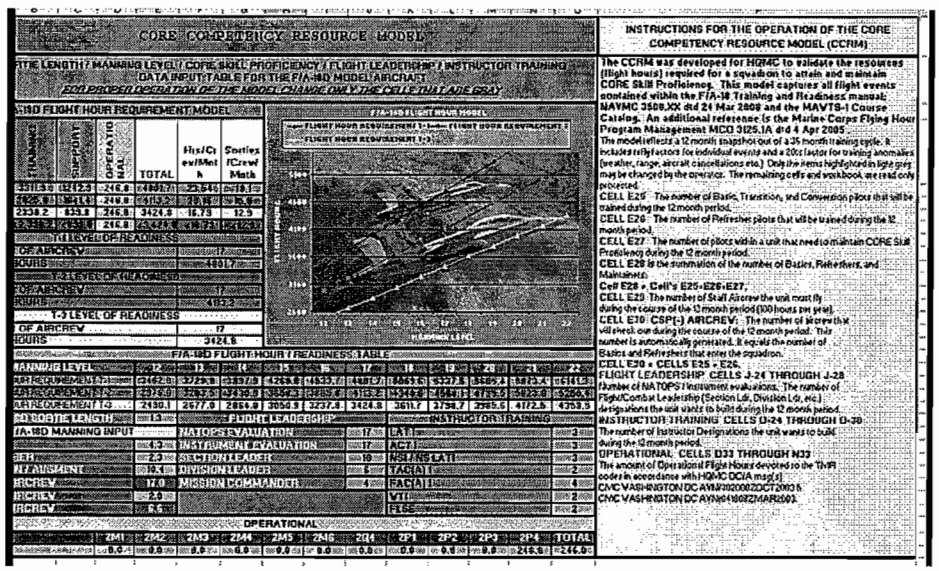

Figure 9: F/A-18 Core Competency Resource Model.[50]

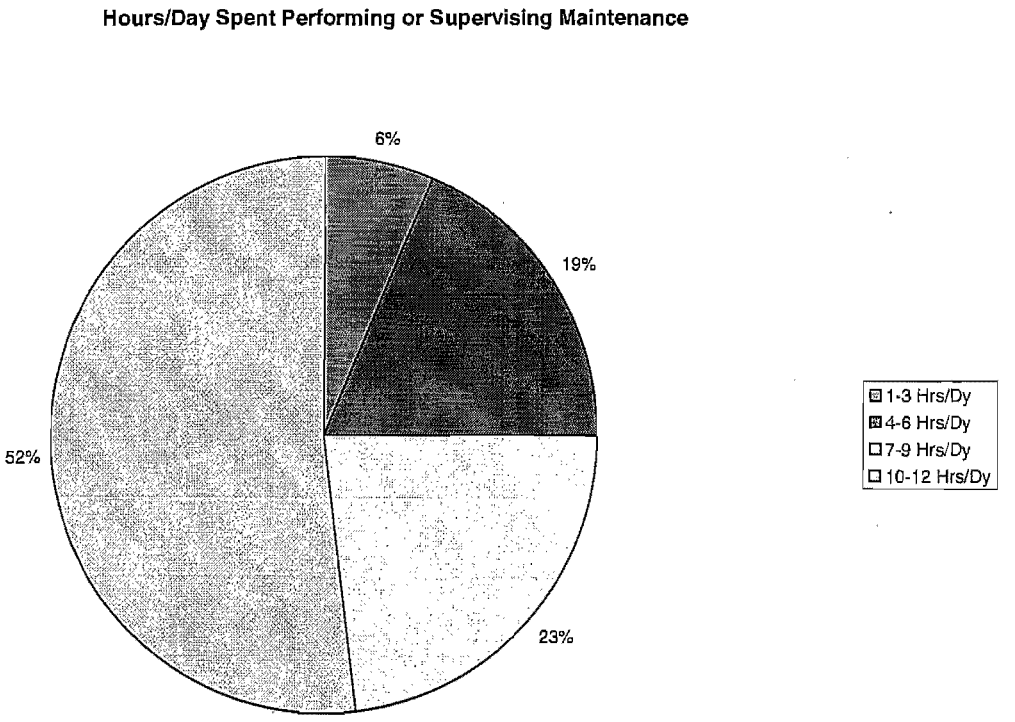

Figure 10: Survey Results for "Hours Per Day Spent Performing/Supervising Maintenance Activities."

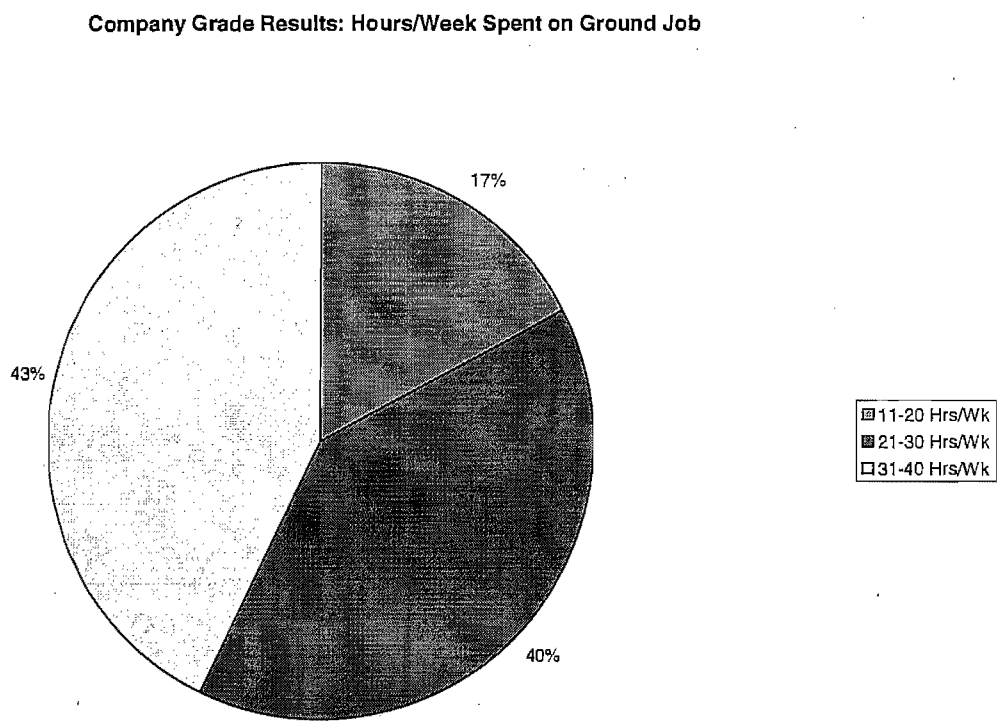

Figure 11: Company Grade Results for Hours/Week Spent on Ground Job.

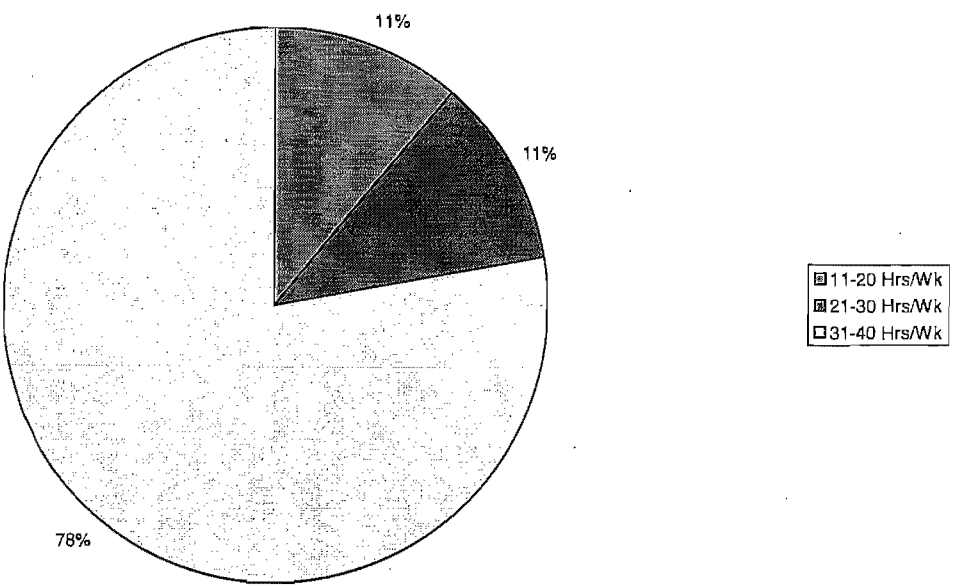

Figure 12: Field Grade Results for Hours/Week Spent on Ground Job.

[43] Training and Education Command, *Annual Training Requirements.*
[44] Headquarters U.S. Marine Corps, *Unit Training Management Guide,* C-1.
[45] Ibid.
[46] Commandant of the Marine Corps, *CH-46E T&R Manual*, 2-3.
[47] Ibid, 3-3.
[48] Commandant of the Marine Corps, *F/A-18 T&R Manual,* Encl (1) pg 11.
[49] Training and Education Command, Aviation Training Branch, *Core Competency Resource Model.*
[50] Ibid.

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